Assignment 4

● Graded

Student

Adam Fenjiro

Total Points

97.5 / 100 pts

Question 1

table **17.5** / 20 pts

- **– 0 pts** Correct
- **– 5 pts** missing table creation commands
- **– 2.5 pts** Minor errors I
- **– 5 pts** Minor errors II
- ✔ **– 2.5 pts** NOT NULL: Attributes don't have "NOT NULL"
- **– 2.5 pts** Required: missing load commands
- **– 2.5 pts** Required: missing select * from all tables
- **– 2.5 pts** Primary KEY: need to create primary key for **every** table
- **– 2.5 pts** Missing output from commands

Question 2

Basic SQL **10** / 10 pts

- ✔ **– 0 pts** Correct
- **– 1 pt** c) Incorrect: duplicate results/results are not distinct
- **– 1 pt** b) : rename the result of selection, should not modify the original table
- **– 4 pts** missing outputs
- **– 2.5 pts** 1 wrong (see comment)
- **– 5 pts** 2 wrong (see comment)
- **– 10 pts** missing
- **– 1 pt** minor

Question 3

Table Join, Union, Subquery, Self-join.

25 / 25 pts

- ✔ **– 0 pts** Correct
- **– 3 pts** One part is incorrect (see comment)
- **– 6 pts** Two parts are incorrect (see comment)
- **– 9 pts** Three parts incorrect (see comment)
- **– 9 pts** missing output
- **– 25 pts** missing
- **– 1.5 pts** aggregate function not allowed for 4
- **– 1.5 pts** aggregate function not allowed for 5
- **– 15 pts** five parts incorrect
- **– 12 pts** four parts incorrect

Question 4

Aggregate Function

25 / 25 pts

- ✔ **– 0 pts** Correct
- **– 2 pts** 1 query wrong
- **– 4 pts** 2 queries wrong
- **– 6 pts** 3 queries wrong
- **– 8 pts** 4 queries wrong
- **– 10 pts** 5 queries wrong
- **– 10 pts** No output on any queries
- **– 25 pts** Missing all parts

Question 5

data modification

20 / 20 pts

- ✔ **– 0 pts** Correct
- **– 1.5 pts** Part A missing output
- **– 1 pt** Part A is incorrect
- **– 3 pts** Part A is missing
- **– 1.5 pts** Part C missing output
- **– 1.5 pts** Part C is incorrect
- **– 1 pt** Wrong part c
- **– 3 pts** Part C is missing
- **– 1.5 pts** Part F missing output
- **– 2 pts** Part F is incorrect
- **– 4 pts** Part F is missing
- **– 20 pts** missing
- **– 1.5 pts** missing some sql commnds

Question assigned to the following page: 1

CS3425: Assignment 4
Adam Fenjiro

1. (20 points) Prepare the tables and data

1)

```
CREATE TABLE Product(
maker VARCHAR(200),
model INT PRIMARY KEY,
type VARCHAR(200)
);

CREATE TABLE PC(
model INT PRIMARY KEY,
speed FLOAT,
ram INT,
hd INT,
price DECIMAL(10, 2),
FOREIGN KEY (model) REFERENCES Product(model)
);

CREATE TABLE Laptop(
model INT PRIMARY KEY,
speed FLOAT,
ram INT,
hd INT,
screen FLOAT,
price DECIMAL(10, 2),
FOREIGN KEY (model) REFERENCES Product(model)
);

CREATE TABLE Printer(
model INT PRIMARY KEY,
color VARCHAR(200),
type VARCHAR(200),
price DECIMAL(10, 2),
FOREIGN KEY (model) REFERENCES Product(model)
);
```

Question assigned to the following page: 1

2)

```
LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MTU/Fall 2023/CS3425/Assignment4/Product.txt' INTO TABLE Product;
LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MTU/Fall 2023/CS3425/Assignment4/PC.txt' INTO TABLE PC;
LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MTU/Fall 2023/CS3425/Assignment4/Printer.txt' INTO TABLE Printer(model, @var, type,price) set color = if (@var='true', 1,0);
LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MTU/Fall 2023/CS3425/Assignment4/Laptop.txt' INTO TABLE Laptop;

SELECT * FROM Product;
SELECT * FROM PC;
SELECT * FROM Printer;
SELECT * FROM Laptop;
```

22	15:29:31	LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MT...	30 row(s) affected Records: 30	Deleted: 0	Skipped: 0 Warnings: 0	0.032 sec
23	15:29:31	LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MT...	13 row(s) affected Records: 13	Deleted: 0	Skipped: 0 Warnings: 0	0.015 sec
24	15:29:31	LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MT...	7 row(s) affected Records: 7	Deleted: 0	Skipped: 0 Warnings: 0	0.016 sec
25	15:29:31	LOAD DATA LOCAL INFILE '/Users/Adam/OneDrive/Documents/MT...	10 row(s) affected Records: 10	Deleted: 0	Skipped: 0 Warnings: 0	0.016 sec

maker	model	type
A	1001	pc
A	1002	pc
A	1003	pc
B	1004	pc
B	1005	pc
B	1006	pc
C	1007	pc
D	1008	pc
D	1009	pc
D	1010	pc
E	1011	pc
E	1012	pc
E	1013	pc
E	2001	laptop
E	2002	laptop
E	2003	laptop
A	2004	laptop
A	2005	laptop
A	2006	laptop
B	2007	laptop
F	2008	laptop
F	2009	laptop
G	2010	laptop
E	3001	printer
E	3002	printer
E	3003	printer
D	3004	printer
D	3005	printer
H	3006	printer
H	3007	printer

model	color	type	price
3001	1	ink-jet	99.00
3002	0	laser	239.00
3003	1	laser	899.00
3004	1	ink-jet	120.00
3005	0	laser	120.00
3006	1	ink-jet	100.00
3007	1	laser	200.00
NULL	NULL	NULL	NULL

model	speed	ram	hd	screen	price
2001	2	2048	240	20.1	3673.00
2002	1.73	1024	80	17	949.00
2003	1.8	512	60	15.4	549.00
2004	2	512	60	13.3	1150.00
2005	2.16	1024	120	17	2500.00
2006	2	2048	80	15.4	1700.00
2007	1.83	1024	120	13.3	1429.00
2008	1.6	1024	100	15.4	900.00
2009	1.6	512	80	14.1	680.00
2010	2	2048	160	15.4	2300.00
NULL	NULL	NULL	NULL	NULL	NULL

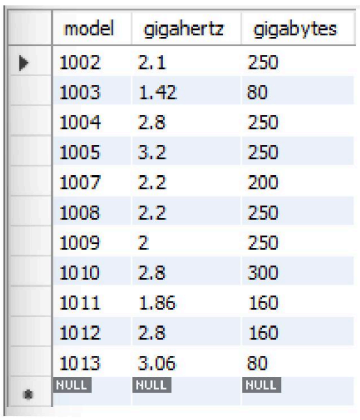
model	speed	ram	hd	price
1001	2.66	1024	250	2114.00
1002	2.1	512	250	995.00
1003	1.42	512	80	478.00
1004	2.8	1024	250	649.00
1005	3.2	512	250	630.00
1006	3.2	1024	320	1049.00
1007	2.2	1024	200	510.00
1008	2.2	2048	250	770.00
1009	2	1024	250	650.00
1010	2.8	2048	300	770.00
1011	1.86	2048	160	959.00
1012	2.8	1024	160	649.00
1013	3.06	512	80	529.00
NULL	NULL	NULL	NULL	NULL

Question assigned to the following page: 2

2. (10 points) Basic SQL select statement.

1)

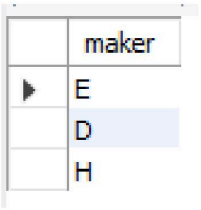
```
SELECT model, speed AS gigahertz, hd AS gigabytes
FROM PC
WHERE price < 1000;
```



model	gigahertz	gigabytes
1002	2.1	250
1003	1.42	80
1004	2.8	250
1005	3.2	250
1007	2.2	200
1008	2.2	250
1009	2	250
1010	2.8	300
1011	1.86	160
1012	2.8	160
1013	3.06	80
NULL	NULL	NULL

2)

```
SELECT DISTINCT maker
FROM Product
WHERE model IN (
   SELECT model
   FROM Printer
);
```



maker
E
D
H

Question assigned to the following page: 3

3. (25 points) Table Join, Union, Subquery, Self-join.

1)

```
SELECT Product.maker, Laptop.speed
FROM Laptop INNER JOIN Product ON Laptop.model = Product.model
WHERE Laptop.hd >= 30;
```

maker	speed
E	2
E	1.73
E	1.8
A	2
A	2.16
A	2
B	1.83
F	1.6
F	1.6
G	2

2)

```
SELECT Product.model, COALESCE(PC.price, Laptop.price, Printer.price) AS price
FROM Product
LEFT JOIN PC ON Product.model = PC.model
LEFT JOIN Laptop ON Product.model = Laptop.model
LEFT JOIN Printer ON Product.model = Printer.model
WHERE Product.maker = 'B';
```

model	price
1004	649.00
1005	630.00
1006	1049.00
2007	1429.00

3)

```
SELECT DISTINCT Product.maker
FROM Product
WHERE Product.type = 'laptop'
AND Product.maker NOT IN (
   SELECT DISTINCT maker
   FROM Product
   WHERE type = 'pc'
);
```

maker
F
G

4)

```
SELECT DISTINCT PC1.hd
FROM PC AS PC1
INNER JOIN PC AS PC2 ON PC1.hd = PC2.hd AND PC1.model <> PC2.model;
```

hd
250
80
160

5)

```
SELECT model, price
FROM Laptop
WHERE speed <= ALL (
   SELECT speed
   FROM Laptop
);
```

model	price
2008	900.00
2009	680.00

Question assigned to the following page: 4

4.(25 points) Aggregate Function.

1)

```
SELECT AVG(speed) AS average_speed
FROM Laptop
WHERE price > 1000;
```

average_speed
1.9983333547910054

2)

```
SELECT AVG(price) AS average_price
FROM PC INNER JOIN Product ON PC.model = Product.model
WHERE maker = "A";
```

average_price
1195.666667

3)

```
SELECT speed, AVG(price) AS average_price
FROM PC
GROUP BY speed;
```

speed	average_price
2.66	2114.000000
2.1	995.000000
1.42	478.000000
2.8	689.333333
3.2	839.500000
2.2	640.000000
2	650.000000
1.86	959.000000
3.06	529.000000

4)

```
SELECT maker
FROM Product
WHERE type = 'PC'
GROUP BY maker
HAVING COUNT(DISTINCT model) >= 3;
```

maker
A
B
D
E

5)

```
SELECT Product.maker, MAX(PC.price) AS max_price
FROM Product INNER JOIN PC ON Product.model = PC.model
GROUP BY Product.maker;
```

maker	max_price
A	2114.00
B	1049.00
C	510.00
D	770.00
E	959.00

Question assigned to the following page: 5

5. (20 points) Database modification

1)

```
CREATE TABLE product_backup AS
SELECT * FROM Product;

CREATE TABLE pc_backup AS
SELECT * FROM PC;

CREATE TABLE printer_backup AS
SELECT * FROM Printer;

CREATE TABLE laptop_backup AS
SELECT * FROM Laptop;


SELECT * FROM product_backup;
SELECT * FROM pc_backup;
SELECT * FROM printer_backup;
SELECT * FROM laptop_backup;
```

maker	model	type
A	1001	pc
A	1002	pc
A	1003	pc
B	1004	pc
B	1005	pc
B	1006	pc
C	1007	pc
D	1008	pc
D	1009	pc
D	1010	pc
E	1011	pc
E	1012	pc
E	1013	pc
E	2001	laptop
E	2002	laptop
E	2003	laptop
A	2004	laptop
A	2005	laptop
A	2006	laptop
B	2007	laptop
F	2008	laptop
F	2009	laptop
G	2010	laptop
E	3001	printer
E	3002	printer
E	3003	printer
D	3004	printer
D	3005	printer
H	3006	printer
H	3007	printer

product_backup 41 × pc_ba

model	speed	ram	hd	screen	price
2001	2	2048	240	20.1	3673.00
2002	1.73	1024	80	17	949.00
2003	1.8	512	60	15.4	549.00
2004	2	512	60	13.3	1150.00
2005	2.16	1024	120	17	2500.00
2006	2	2048	80	15.4	1700.00
2007	1.83	1024	120	13.3	1429.00
2008	1.6	1024	100	15.4	900.00
2009	1.6	512	80	14.1	680.00
2010	2	2048	160	15.4	2300.00

model	color	type	price
3001	1	ink-jet	99.00
3002	0	laser	239.00
3003	1	laser	899.00
3004	1	ink-jet	120.00
3005	0	laser	120.00
3006	1	ink-jet	100.00
3007	1	laser	200.00

model	speed	ram	hd	price
1001	2.66	1024	250	2114.00
1002	2.1	512	250	995.00
1003	1.42	512	80	478.00
1004	2.8	1024	250	649.00
1005	3.2	512	250	630.00
1006	3.2	1024	320	1049.00
1007	2.2	1024	200	510.00
1008	2.2	2048	250	770.00
1009	2	1024	250	650.00
1010	2.8	2048	300	770.00
1011	1.86	2048	160	959.00
1012	2.8	1024	160	649.00
1013	3.06	512	80	529.00

Question assigned to the following page: 5

2)
1.

maker	model	type

```
SELECT * FROM Product
WHERE model = 1100;
```

model	speed	ram	hd	price

```
SELECT * FROM PC
WHERE model = 1100;
```

2.

```
INSERT INTO Product (maker, model, type)
VALUES ('C', 1100, 'PC');

INSERT INTO PC (model, speed, ram, hd, price)
VALUES (1100, 3.2, 1024, 180, 2499);
```

3.

maker	model	type
C	1100	PC
NULL	NULL	NULL

```
SELECT * FROM Product
WHERE model = 1100;
```

model	speed	ram	hd	price
1100	3.2	1024	180	2499.00
NULL	NULL	NULL	NULL	NULL

```
SELECT * FROM PC
WHERE model = 1100;
```

3)
1.

model	speed	ram	hd	price
1003	1.42	512	80	478.00
1013	3.06	512	80	529.00
NULL	NULL	NULL	NULL	NULL

```
SELECT * FROM PC
WHERE hd < 100;
```

2.

```
DELETE FROM PC
WHERE hd < 100;
```

3.

model	speed	ram	hd	price
NULL	NULL	NULL	NULL	NULL

```
SELECT * FROM PC
WHERE hd < 100;
```

Question assigned to the following page: 5

4)
1.
SELECT ram, hd FROM PC;

2.
UPDATE PC
SET ram = ram * 2, hd = hd + 60;

3.
SELECT ram, hd FROM PC;

ram	hd
1024	250
512	250
1024	250
512	250
1024	320
1024	200
2048	250
1024	250
2048	300
2048	160
1024	160
1024	180

ram	hd
2048	310
1024	310
2048	310
1024	310
2048	380
2048	260
4096	310
2048	310
4096	360
4096	220
2048	220
2048	240